# Review of Lecture 3

- **Reading data in MATLAB**
  - **The function `Input()`**

```
>> N = input('Please enter a number:')
>> Nm = input('Please enter a name:','s')
```

- **Displaying data in MATLAB**
  - **The function `disp()`**

```
>> disp(A + B)
>> disp('Hellow world')
```

`disp()` **does not allow formatting.**

- **The function `fprintf()`**

The **main characteristic** of this function is **controlling the format**

**The `%s` format**

```
>> fprintf('My name is %s \n', Name)
```

**The `%d` format**

```
>> fprintf('Ahmed age is %d \n', Age)
```

**The %f format**

```
>> fprintf('The value of pi is %f \n',pi)
   The value of pi is 3.141593
>> fprintf('The value of pi is %3.2f \n',pi)
   The value of pi is 3.14
```

Info 3

# Introduction to MATLAB

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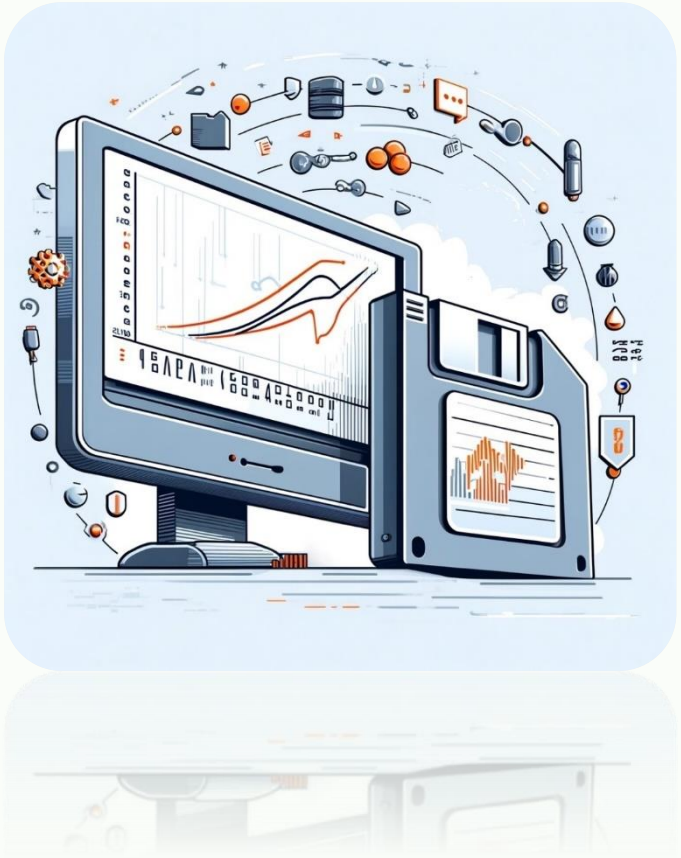
## Lecture 3

# Read, display and save data in MATLAB (2/2)

# 1. Saving and loading data in MATLAB

Saving data in MATLAB helps to preserve the results of programs and share them with others or follow computations in subsequent analysis.



# 1. Saving and loading data in MATLAB

## Saving data in binary file format

To save the variables of the workspace in (.mat file), we use

| | |
|---|---|
| Save all variables located in the workplace | `save ('file-name.mat')` or<br>`save file-name.mat` |
| Save only the desired variables | `save ('file-name', 'variable1', 'variable2')` or<br>`save file-name, variable1, variable2` |
| Add variables to an existing file | `save('file-name','variables','-append')` |

If a variable already exists in the selected file, the save function overwrites it with the new value

# 1. Saving and loa

## Saving data in binary file f

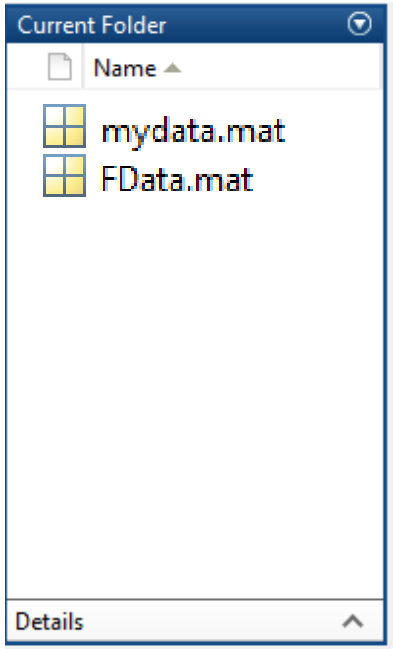
To save the variables of the work

Save all variables located in the workplace

Save only the desired variables

Add variables to an existing file

If a variable already exists in the selected

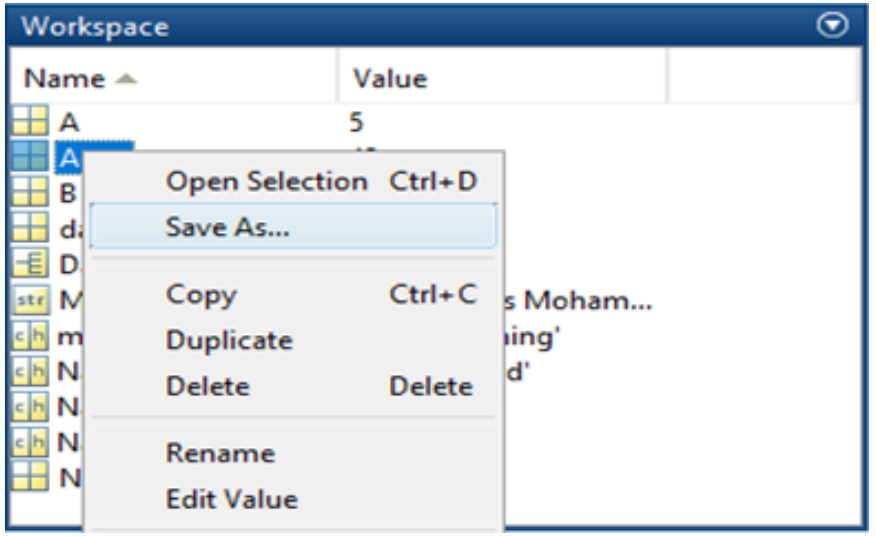



```
>> Name = "Ahmed";
>> Age = 20;
>> save('mydata.mat'); % Save all data to a .mat file
>>
>> Father = "Mohammmed";
>> save('FData.mat','Father'); % Save the variable
                               %  "Father" to FData.mat file
>>
>> save('mydata.mat','Father', '-append'); % Add the
                    % variable "Father" to mydata.mat file
```

# 1. Saving and loading data in MATLAB

## Saving data in binary file format

In addition, we can **save** the data into file by using the **menu bar of MATLAB** or **contextual menu** in the workspace part

# 1. Saving and loading data in MATLAB

## Loading data from file in MATLAB

This function **`load()`** is used to read data structure from a file, which can be a MATLAB file (.mat file), text file, Excel file or others and **store it in the workspace** or in a **defined user variable**.

The basic syntax of this function is indicated below:

**`load('file-name')`**: reads data from the indicated file `'file-name'`.

**`Data =load('file-name')`**: reads data and save it in variable Data.

**`load('file-name', 'variables')`**: reads specified variables from a .mat file.

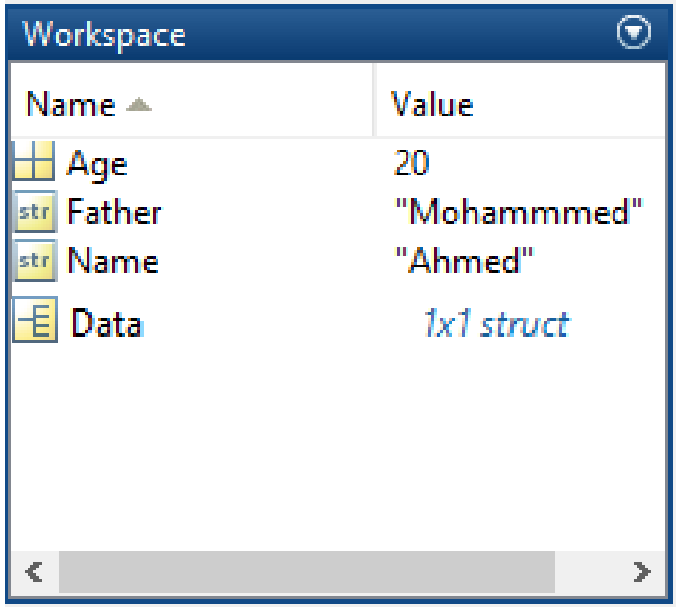
# 1. Saving and loa

## Loading data from file in M

In **the first case**, the `load()` function reads the data structure located in `'mydata.mat'` and stores it into the workspace.

However, the acquired data are saved into **`Data`** variable in **the second case**.

```
>> % Loading data
>> load('mydata.mat')
>>
>> Data = load('mydata.mat')
>>
>> clear; clc
```



# 1. Saving and loa

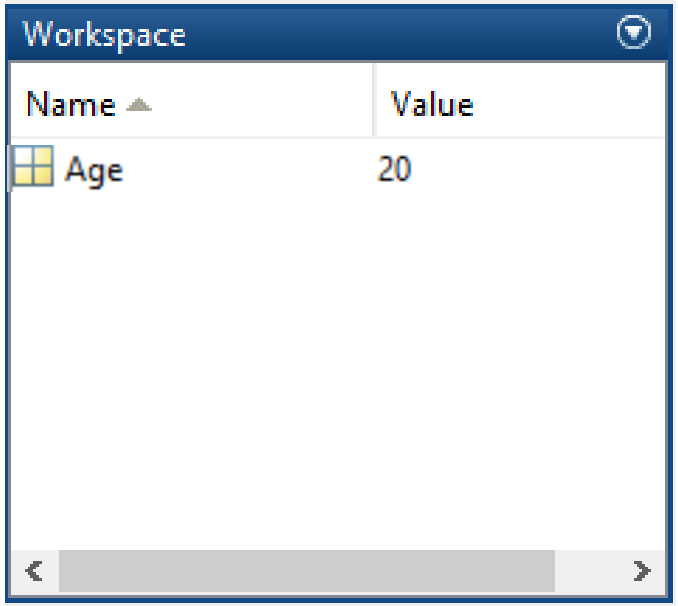
## Loading data from file in M

In **the first case**, the `load()` function reads the data structure located in `'mydata.mat'` and stores it into the workspace.

However, the acquired data are saved into **`Data`** variable in **the second case**.

**The last example** presents the use of `load()` function to load a specific variable from the file `'mydata.mat'`

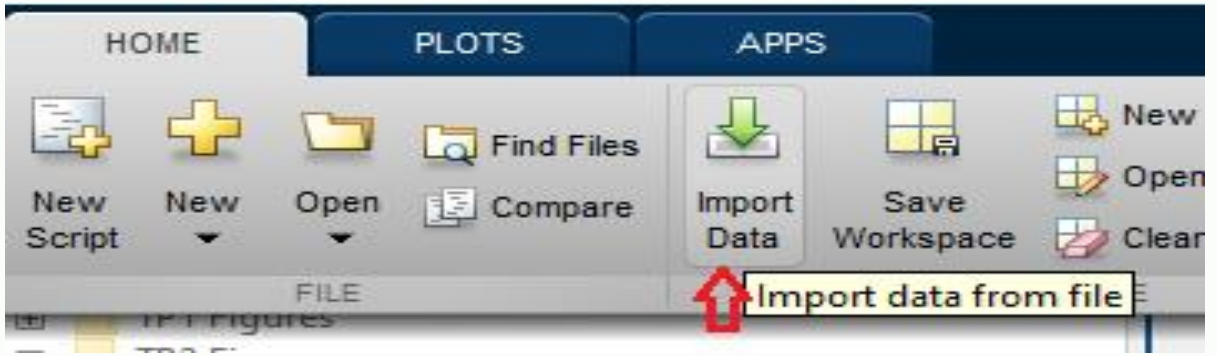
```
>> load('mydata.mat' , 'Age');
>>
```



# 1. Saving and loading data in MATLAB

## Loading data from file in MATLAB

In addition, we can read the data located in external file using the **MATLAB menu**



# 2. Script with input, output and save functions

In the pervious script, we have created a program to calculates the area of a rectangle using the **input** and **output** functions.

Now, we improve the script by introducing the **save** function

Editor - D:\Univ jijel\2024-2025\MATLAB for 2nd year engineer\rect_area.m

rect_area.m

```
% rect_area : Program calculates the area of a rectangle
% Version 1.0

length = input('Please enter the length: ');
width  = input('Please enter the width: ');
rect_area = length * width      % Rectangle area formula

% print the result
fprintf('The area of a rectangle with length %.2f and width ...
%.2f is %.2f \n', length, width, my_area)

% save the data
save('Rect_data.mat'); % Save the workspace in .mat file
```

# Practice